25X1A

[redacted]834-63

Copy 6 of 6

NRO REVIEW COMPLETED

16 DEC 1963

MEMORANDUM FOR : Assistant Deputy Director (Science and Technology)

SUBJECT : Feasibility Studies on Mobile Launched Indications Satellite

25X1A

1. The attached papers are OSA work statements on the feasibility studies outlined at the [redacted] session. I am transmitting them to you for your comment and for guidance on necessary steps prior to discussions with possible contractors.

2. I briefed Dr. McMillan on our plans on Friday, 6 December. Dr. McMillan suggested we work closely with General Greer who has done some work on these subjects and also requested that he be shown the work statements prior to contracting.

25X1A 3. In order to conform to the schedule laid out at [redacted], we would like to proceed as soon as possible. In particular, we should notify possible bidders regarding Attachment E. Further, we should initiate work soon in house on Attachment C and discuss the remaining work statements with the possible contractors.

4. I am presently unclear on whether or not we should run these by Dr. McMillan. Although he has asked to see them, it is within my authority as Director, Program B, NRO to reschedule funds within a line item.

(Signed) Jack C. Ledford

JACK C. LEDFORD
Colonel USAF
Assistant Director
(Special Activities)

Attachments - 5
As noted above

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[redacted] D/OSA:gp (12 Dec. 1963)

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Attachment A to
3654-63

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WORK STATEMENT

Possible Contractors

STL, LMSC, [redacted] GD

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Purpose:

To determine whether a photographic satellite can meet requirements of indications intelligence mission.

Assumptions:

Mobile launch at sea or from aircraft.

Over-land or over-water recovery.

Target arrays and mission time spans to be supplied by agency.

Mission lifetime of less than one orbit to about two days.

Work Description:

Parametric study to determine swath width, altitudes, inclinations, launch points, launch times, and recovery points necessary to cover given target arrays in mission time spans. Effect of variation of these parameters and usefulness of orbital maneuvers on target coverage. Effect of orbit element selection to minimize probability of optical detection.

Duration:

The effort shall be completed within three months of go-ahead.

Reporting:

Informal status reports shall be given not oftener

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than every thirty days. Three copies of the final report shall be submitted with 30 days of completion of effort.

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Attachment B to [redacted]-63

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WORK STATEMENT

[redacted] ITEK

NRO 25X1

Purpose:

Study of light weight high resolution cameras.

Assumptions:

Minimum swath width and orbital data to be provided

Mission time spans to be provided

Guidance and control system based on [redacted]

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Work Description:

Examine design implications of new recording materials, particularly those under development by [redacted] and determine trade-offs available between weight, resolution, swath width and film capacity. Determine stabilization and control accuracy requirements. Provide assistance to other contractors studying guidance and control, targeting and orbital elements.

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Duration:

The effort shall be completed within four months of go-ahead.

Reporting:

Informal status reports shall be given not oftener than every thirty days. Three copies of the final report shall be submitted within 30 days of completion of effort.

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Attachment C to [redacted]-263

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WORK STATEMENT

In House With Assistance of

STL, Aerospace, LMSC or [redacted]

NRO
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Purpose:

To define the current state-of-the-art in satellite launch vehicles, with particular emphasis on those applicable for launch from mobile (sea or air) platforms at short notice.

Scope:

A survey shall be made of systems available within the 1966-1970 time period, applicable to satellite launching. Estimates shall be made of development problems, time, and cost of various systems described.

Work Description:

a. Parametric studies shall be made over a range of orbital injection conditions (velocity and altitude) using existing systems, modified systems, and new systems. Particular attention should be paid to payload weight in orbit as a function of available staging.

b. Space and weight limitations of potential air or sea launch platform shall be considered.

c. Systems considered shall have the capability of extended storage; and, when suitably alerted, shall be capable of being maintained in a ready status for extended period. In this status, it shall be capable of launch on very short notice.

Duration:

The study shall be completed within three months from go-ahead.

Reporting:

a. Informal (oral or brief notes) reports shall be made, not oftener than once a month.

b. Three copies of the final report shall be submitted within 30 days of the completion of the study.

Attachment D to [redacted] 834-63

WORK STATEMENT

[redacted]

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NRO 25X1

Purpose:

Application of [redacted] strap down inertial system to mobile launch indications mission.

Assumptions:

Rapid targeting (~1 hour)

Quick launch (~1 hour)

Mobile launch

No ground-space command or tracking

Precise recovery over land or water

Orbital maneuvers may be used

Mission lifetime of less than one orbit to about two days

Recovery within 48 hours of launch

Work Description:

Determination of guidance, control and targeting requirements for indications mission and adaption of [redacted] to meet these requirements. Testing necessary to insure adaptability. Payload characteristics (swath width, resolution) will be given.

Study of attitude and velocity control system, angular rates, response rates and stabilization times.

Duration:

The effort shall be completed within 3 months of go-ahead.

Reporting:

Informal status reports shall be given not oftener than every thirty days. Three copies of the final report shall be submitted within 30 days of completion of effort.

Attachment E to
3834-63

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WORK STATEMENT

For Bidders on Recovery
Systems and Techniques

Purpose:

To define the current state-of-the-art on recovery techniques, with especial emphasis on accurate recovery within designated areas, and on means to reduce recovery force size.

Scope:

The effort shall be limited to analytical investigations. No hardware or test program is contemplated.

Work Description:

A. Applicability of guidance information available from an inertial system such as the [redacted] Space Navigation System.

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B. Weight and volume requirements for various maneuverable and non-maneuverable re-entry systems.

C. Accuracy of re-entry achievable with various re-entry systems.

D. Estimates of research and development needs to bring to practical application the re-entry schemes proposed.

E. Estimates of recovery system weights and volumes for various amounts of payload.

Limitations and Supplementary Data:

A. Re-entry-vehicle-ground communication shall be limited to re-entry vehicle altitudes below 75-100,000 feet. However, it is desirable to keep radiation for the vehicle to a minimum.

B. Air or land recovery is preferred.

Duration:

A. Informal status reports (oral or brief notes) shall be given not oftener than every thirty days.

B. Three copies of the final report shall be submitted within 30 days of completion of effort.